

In the Specification:

Please replace the paragraph beginning on page 9, line 22 with the following amended paragraph.

"For a more complete understanding of this invention, reference is now made to the following detailed description of the embodiments as illustrated in the accompanying drawings, in which like reference designations represent like features throughout the several views and ~~wherein~~: For convenience, the following abbreviations are used in the drawings: S1 is a first shield; S2 is a second shield; L1 is a first lead; L2 is a second lead; PL is a pinned layer; FL is a free layer; AF (or alternatively AFM) is antiferromagnetic material; I1 is a first insulation; I2 is a second insulation; I3 is a third insulation; HB is hard bias; HM is hard magnet; ABS is air bearing surface; P1 and P2 are first and second poles; G1 is an insulating gap layer; G3 is another gap layer; TB is a tunnel barrier; and, C1 and C2 are conductor layers.

Please replace the paragraph beginning on page 13, line 7 with the following amended paragraph.

Figs. 4A and 4B show schematic representations of the ABS of exemplary MTJ sensor embodiments of this invention wherein the free layer stabilization is provided using conductive AFM layers separated from the MTJ stack by thick insulation layers, similarly conceptually to the discussion above in connection with Figs. 3A and 3B. In Fig. 4A, the top MTJ sensor 166 includes the active region 168 disposed between the two side regions 170 and 172.

Operation and fabrication of MTJ sensor 166 may be appreciated with reference to the above discussion of Fig. 3A except that, instead of HM layer 138 (Fig. 3A), MTJ sensor 166 uses the conductive AFM layers 173 to provide stabilization of the FM free layer 174. By permitting conductive as well as non-conductive materials to be considered for ~~second AFM layer 172~~ second AFM layer 173, a wider range of choices is made available for resolving material conflicts between ~~second AFM layer 172~~ second AFM layer 173 and the first AFM layer 176.